

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number
WO 2004/026224 A3

(51) International Patent Classification⁷: **C07D 307/93**

(74) Agent: **CHOI, Kyu Pal**; 4th Floor, Halla Classic Building, 824-11, Yeoksam-dong, Kangnam-gu, Seoul 135-080 (KR).

(21) International Application Number:
PCT/KR2003/001902

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:
18 September 2003 (18.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2002-0056836
18 September 2002 (18.09.2002) KR

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **YON-SUNG FINE CHEMICAL CO. LTD.** [KR/KR]; 51-301, Science Technology Park, Sungkyunkwan University, 300, Chonchon-dong, Changan-gu, Suwon, Kyonggi-do 440-746 (KR).

Published:
— *with international search report*

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **KIM, Yong Hyun** [KR/KR]; 73-73, Hwagok 5-dong, Gangseo-gu, Seoul 157-015 (KR). **LEE, Yiu Suk** [KR/KR]; Woosung Apt. #304-407, 105, Sadang-dong, Dongjak-gu, Seoul 156-090 (KR).

(88) Date of publication of the international search report:
24 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **PROCESS FOR PREPARING PROSTAGLANDIN DERIVATIVES AND STARTING MATERIALS FOR THE SAME**

(57) Abstract: The present invention provides a process for preparing benzoprostacycline derivatives of formula (I), i.e. 5,6,7-trinor-4,8-inter-m-phenylene PGI₂ derivatives, and vinyl tin compounds of formula (III) as starting materials for the same.

WO 2004/026224 A3

INTERNATIONAL SEARCH REPORT

.....national application No.
PCT/KR2003/001902

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 C07D 307/93

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 C07D 307/93

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean patents and applications for inventions since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CA, Delphion Research Intellectual Property network database,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Wakita H et al. 'Regioselective Protection of 11-hydroxy group and inversion of configuration at C-15 in m-Phenylene PGI2 Derivatives' In Heterocycles, 1998, vol.48, No.2, p2559-2571 see the whole document	1-7, 8
A	GB0215757 A (JOHNSON MATTHEY PUBLIC LIMITED COMPANY) 14. Aug. 2002 (14. 08. 2002)	1-7, 8
A	EP0641335 A (IOWA STATE UNIVERSITY RESEARCH FOUNDATION, INC) 8. March. 1995 (08. 03. 1995)	1-7, 8
A	US5233059 A (IOWA STATE UNIVERSITY RESEARCH FOUNDATION, INC) 3. Aug. 1993 (03. 08. 1993)	1-7, 8
A	US5202447 A (Torays Industries, INC) 13. Apr. 1993 (13. 04. 1993)	1-7, 8

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

08 MARCH 2004 (08.03.2004)

Date of mailing of the international search report

09 MARCH 2004 (09.03.2004)

Name and mailing address of the ISA/KR



Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

LIM, Hea Joon

Telephone No. 82-42-481-5590

